

CLAIMS

We claim:

1. A method for evaluating a test compound's ability to modulate prolyl-4-hydroxylase (P4H), comprising the steps of:

(a) introducing a test compound into a test chimeric nematode, a P4H-gene modified nematode, or a wild-type nematode, wherein the test chimeric nematode has a complemented prolyl-4-hydroxylase gene mutation, and

(b) observing the effect of the test compound on the prolyl 4-hydroxylase activity of the progeny of the test nematode, P4H-gene modified nematode or the wild-type nematode, wherein a dpy or embryonic lethal phenotype indicates prolyl-4-hydroxylase inhibition.

2. The method of claim 1, wherein the test compound is a chemical.

3. The method of claim 1, wherein the inhibitor is a protein or peptide.

4. The method of claim 1, wherein the introduction of the test compound involves placing the nematode in a solution containing the test compound.

5. The method of claim 1, wherein the test compound is introduced into a wild-type nematode and the observation of dpy or embryonic lethal phenotype indicates nematode prolyl 4-hydroxylase inhibition.

6. The method of claim 1, wherein the test compound is introduced into a P4H-gene modified nematode and the observation of a dpy or embryonic lethal phenotype indicates P4H inhibition.

7. The method of claim 1, wherein the introduction of a test compound is into a test chimeric nematode and the observation of dpy or embryonic lethal phenotype indicates non-native prolyl 4-hydroxylase inhibition.

8. The method of claim 1, wherein the test chimeric nematode is a *C. elegans* and is a *dpy-18* mutation.

9. The method of claim 1, wherein the observation of a dpy phenotype indicates that the test compound modulates the P4H gene found on chromosome III.

10. The method of claim 1, wherein the nematode is a member of the genus *Caenorhabditis*.

11. The method of claim 1 wherein the nematode is *C. elegans*.

12. A method for evaluating a test compound's ability to modulate prolyl 4-hydroxylase, comprising the step of:

(a) introducing a test compound into a nematode comprising a *dpy-18* or *poh-1* mutation phenotype, and

(b) observing the effect of the test compound on the prolyl-4-hydroxylase activity of the progeny of the test nematode, wherein the rescue of the *dpy-18* or *phy-1* phenotype indicates an increased level of prolyl-4-hydroxylase activity.

13. The method of claim 12 wherein the nematode is a member of the genus *Caenorhabditis*.

14. The method of claim 13 wherein the nematode is *C. elegans*.

15. The method of claim 1 wherein the test compound is part of a combinatorial chemical library.

16. The method of claim 12 wherein the test compound is part of a combinatorial library.

17. A method for evaluating a test compound's ability to modulate P4H, comprising the steps of:

- (a) introducing a test compound into a test chimeric nematode, a P4H-gene modified nematode, or a wild-type nematode, wherein the test chimeric nematode has a complemented P4H gene mutation, and
- (b) measuring the level of P4H activity of the progeny of the test nematodes, P4H gene modified nematode or wild-type nematode, wherein a lower P4H activity compared to untested control nematodes indicates that the test compound is an inhibitor of P4H.

18. The method of claim 17 wherein the measurement of P4H activity is via a ratio of P4H to proline.

19. The method of claim 17 wherein the nematode is a member of the genus *Caenorhabditis*.

20. The method of claim 19 wherein the nematode is *C. elegans*.

21. The method of claim 17 wherein the test compound is part of a combinatorial library.